

ENERGY STAR® LABELED MANUFACTURED HOMES: DESIGN, MANUFACTURING, INSTALLATION AND CERTIFICATION PROCEDURES

Excellence in Design,
Manufacturing and Installation Series



Qualifying the Plant

Producing Energy Star Labeled Homes

Maintaining Energy Star Partner Status

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Acknowledgements

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Harold Woodside, *R-Anell Housing Group*, Project Chair
Tom Blesch, *Reliant Building Products*
Ed Bryant, *Champion Enterprises*
Chuck Fanaro, *Hi-Tech Housing*
Bill Farish, *Fleetwood Enterprises*
Jim Howell, *American Homestar*
Roger Huddleston, *Huddleston Homes*
Jack Ireton-Hewitt, *Titan Homes*
Mike Kinard, *Kinro Windows*
Tom Rehrig, *Clayton Homes*
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Dick Veenstra, *Fleetwood Enterprises*
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MHRA staff responsible for coordinating and facilitating the development of the guide:

Emanuel Levy, Executive Director
Francis Conlin, Project Coordinator
Deane Evans, FAIA, Editor
Sandra Ho, Editorial Director
Samantha Skolnik, Production Assistant

Disclaimer

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INTRODUCTION

This Guide was developed for the manufactured housing industry and provides information necessary to design, manufacture, label and install homes under the ENERGY STAR program.

WHAT IS ENERGY STAR?

ENERGY STAR is a nationally recognized, voluntary labeling program designed to identify and promote energy-efficient products to consumers and business owners across the United States. Initiated by the US Environmental Protection Agency (EPA) in 1992, ENERGY STAR is now a joint effort of EPA and the US Department of Energy, with each agency taking responsibility for promoting the ENERGY STAR label in particular product categories.



Money Isn't All You're Saving

The EPA is responsible for administering the ENERGY STAR Labeled Homes program.

WHAT IS AN ENERGY STAR LABELED HOME?

An ENERGY STAR labeled home is at least 30% more energy efficient in its heating, cooling and water heating than a comparable home built to the Model Energy Code (MEC). This increased level of energy efficiency can be met using standard technologies and manufacturing practices by successfully integrating three key home components:

- An energy efficient building envelope (effective insulation, tight construction, advanced windows)
- Energy efficient air distribution (tight, well-insulated ducts)
- Energy efficient equipment (heating, cooling and hot water).

WHY SHOULD A PLANT PARTICIPATE IN ENERGY STAR?

There are at least four basic reasons why a plant should consider making the commitment to producing ENERGY STAR labeled homes.

1. The ENERGY STAR label can be a powerful sales tool. ENERGY STAR is a nationally recognized brand, backed and promoted by two federal agencies. Affiliating with this brand can help differentiate a manufactured home design from its peers within the industry and from site-built homes in the same market.
2. ENERGY STAR labeled homes—because they are highly energy efficient—have lower monthly operating costs, reducing a home owner's real monthly out-of-pocket expenses and potentially increasing the resale value of a home.
3. The efficiency measures built into an ENERGY STAR labeled home have residual benefits that increase customer satisfaction. They are typically more comfortable, durable, quiet and environmentally friendly than non-ENERGY STAR labeled homes—all potential pluses for home buyers and owners.
4. Since ENERGY STAR covers all types of housing and ties performance directly to a single standard, the Model Energy Code (MEC), the program offers another opportunity for a manufactured housing producer to demonstrate parity with or superiority to site-built competitors.

These four considerations make a strong argument for the value of joining the program and becoming an ENERGY STAR Partner.

HOW CAN A PLANT PARTICIPATE IN ENERGY STAR?

Becoming an ENERGY STAR Partner is a three-part process that occurs in the following sequence:

1. Qualify the Plant (Chapter 2)

The first step is to qualify the plant to produce ENERGY STAR labeled homes on an ongoing basis. This is a nine-step process that is done once and usually requires a few weeks or so to complete.

2. Produce ENERGY STAR Labeled Homes (Chapter 3)

Once a plant has been qualified it can proceed to manufacture ENERGY STAR labeled homes on an ongoing basis. This involves implementing manufacturing, inspection and quality control procedures developed during the qualification process in the plant and in the field.

3. Maintain ENERGY STAR Labeled Home Manufacturer Status (Chapter 4)

In order to continue manufacturing ENERGY STAR labeled homes a plant must maintain its status as an ENERGY STAR labeled home manufacturer. This is a three-part inspection, reporting and field verification process that requires:

1. implementing on-going quality control procedures in the plant;
2. periodically spot checking the performance of ENERGY STAR labeled homes in the field; and
3. providing regular reports to the EPA on the number of ENERGY STAR labeled homes a plant produces.

All three parts are straightforward but require a commitment of time and resources, backed by a commitment to marketing and selling the ENERGY STAR brand.

ACCESS TO RESOURCES

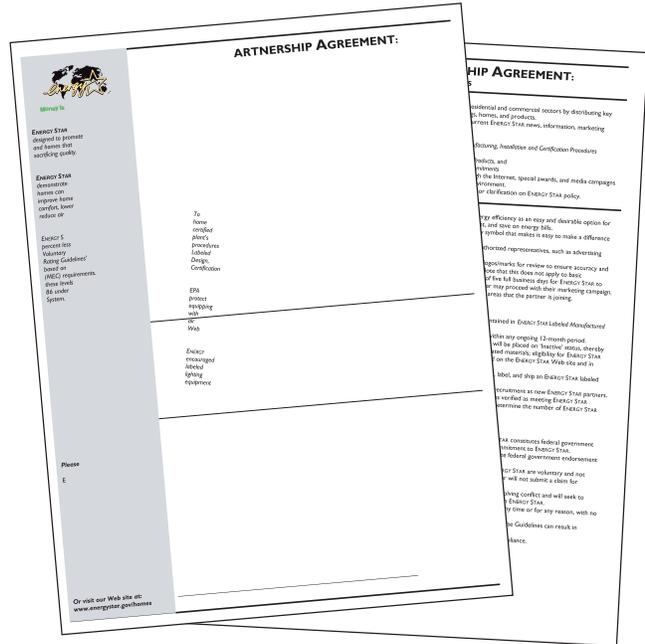
Additional information regarding the ENERGY STAR Labeled Homes program—including marketing materials, copies of forms, logos, and the ENERGY STAR label—are available on the web at www.mhrahome.org or from EPA at www.energystar.gov/homes.

Producing ENERGY STAR labeled manufactured homes starts with qualifying the plant. Plant qualification is done once and usually requires a few weeks or so to complete. The qualification steps are described below:

Step 1. Submit ENERGY STAR Partnership Agreement

Who is responsible: Plant Representative

Qualifying a plant to manufacture ENERGY STAR labeled homes begins with submitting an ENERGY STAR Partnership Agreement to the EPA. A copy of the agreement can be found in Appendix A. Plant personnel must complete this agreement and submit it to the EPA to register as an ENERGY STAR partner. Successful completion of Steps 2 through 9 below qualifies the plant as a partner with the authorization to produce ENERGY STAR labeled homes.



Step 2. Retain a Manufactured Housing ENERGY STAR Certifier

Who is responsible: Plant Representative

The next step in the qualification process is for the plant to hire an independent, third party certifier who will:

- Certify that the plant meets the ENERGY STAR requirements;
- Certify that the plant's ENERGY STAR labeled home designs meet ENERGY STAR requirements;
- Certify the in-plant and in-field performance of at least three ENERGY STAR labeled homes produced by the plant.

Further information on Manufactured Housing ENERGY STAR Certifiers can be found in Appendix B.

Step 3. Design Homes to Meet ENERGY STAR Requirements

Who is responsible: **Plant Design / Engineering Staff, Manufactured Housing ENERGY STAR Certifier**

The next step is for the plant to create home designs that meet the requirements of the ENERGY STAR program and to ensure that these designs or the methods used to create them are certified by the ENERGY STAR Certifier. Each unique home configuration must be reviewed and qualified.

Appendix C provides options for designing homes that meet ENERGY STAR requirements.

The manufacturer uses the information contained in Appendix C to create designs for all the ENERGY STAR labeled homes they intend to manufacture. At a minimum, this will include the three consecutive homes required by the qualification process (see Step 5 below).

Step 4. Incorporate ENERGY STAR Design Features into the DAPIA-approved Packages, Quality Control Manual and Manufacturers Installation Manual

Who is responsible: **Plant Engineering and Quality Control Staff**

Information about the ENERGY STAR features in the new home designs is now incorporated into the DAPIA-approved packages, the plant Quality Control Manual, and the Manufacturers Installation Manual.

Step 5. Manufacture, Inspect and Test ENERGY STAR Complying Homes in the Plant and Attach ENERGY STAR Labels

Who is responsible: **Plant Production / Engineering Staff, Manufactured Housing ENERGY STAR Certifier**

As part of the qualification process, a plant must manufacture a minimum of three consecutive homes that meet specific performance requirements established by the ENERGY STAR program. As they are manufactured, the homes are inspected by the plant's IPIA in the normal manner. In addition, the ducts are tested to determine their level of



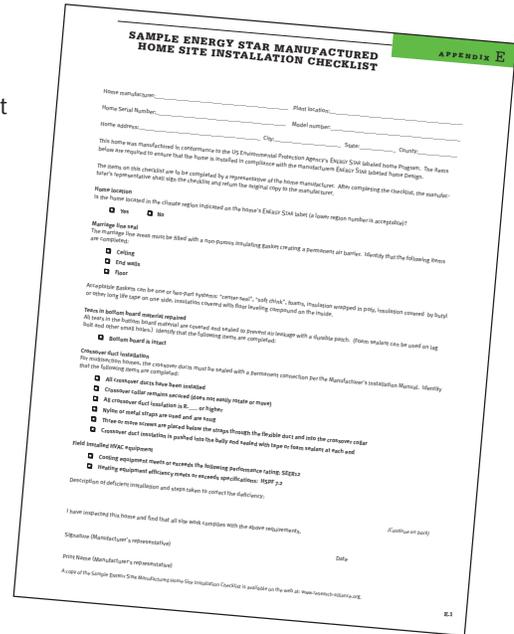
leakage. The ENERGY STAR Certifier verifies that the ducts do not exceed allowable leakage levels. If any of the three homes fails the duct test, additional homes are tested until three consecutive homes are produced that meet all ENERGY STAR requirements and that pass the duct leakage test. A plant cannot be qualified to produce ENERGY STAR labeled homes until three consecutive homes meeting all the requirements have been manufactured. After all tests are successfully completed ENERGY STAR labels are affixed to the three certification homes. An explanation of how to complete the information on the ENERGY STAR label and how to place the label on the home is provided in Appendix D.

Step 6. Develop Site Installation Checklist

Who is responsible: Plant Engineering Staff and Manufactured Housing ENERGY STAR Certifier

Every ENERGY STAR labeled home that leaves a manufacturing plant must have a Site Installation Checklist identifying items that are part of the ENERGY STAR package but installed and verified at the time of home installation. The Checklist should also be included in the Manufacturers Installation Manual.

A sample checklist is included in Appendix E.



Step 7. Install, Inspect and Test Three Certification Homes in the Field

Who is responsible: Installer, Plant Site Representative, Manufactured Housing ENERGY STAR Certifier

The three certification homes are now installed in the field. Following each installation, the plant's representative reviews the items on and signs the Site Installation Checklist. The ENERGY STAR Certifier monitors this process.

The homes are then tested, in the field, for duct and whole house air leakage. The ENERGY STAR Certifier certifies that duct and whole home leakage levels meet or exceed ENERGY STAR requirements. If a home fails either test, modifications must be implemented immediately on site and the home re-tested until it passes.

Any design or installation changes resulting from these tests must be recorded and used to update the ENERGY STAR specifications contained in the DAPIA-approved package and the Site Installation Checklist.

Step 8. Incorporate ENERGY STAR Practices into Routine Operations

Who is responsible: Plant Management, Engineering Staff, and Installers

Once the three certification homes have been successfully installed, the plant must take steps to transfer the lessons learned from the process into its routine ENERGY STAR production, including the following:

- Instruct key plant personnel on the critical processes and procedures for creating and manufacturing new ENERGY STAR labeled homes, including any corrective actions undertaken during the installation of the three certification homes.
- Review with the plant's DAPIA and IPIA the unique features contained in the ENERGY STAR DAPIA-approved packages.
- Instruct set-up crews on how to correctly install and inspect ENERGY STAR labeled homes in the field.
- Establish a routine process for collecting, tracking and archiving documentation on all ENERGY STAR labeled homes to be produced by the plant. Such documentation must include: the DAPIA-approved package for each ENERGY STAR labeled home; the Site Installation Checklist; reports of non-conformance; reports on corrective actions taken; and, basic home data (owner, retailer, location, date installed, etc.).
- Document these activities so that they can be reviewed by EPA or its agent if required.

Step 9. Inform EPA of Successful Certification

Who is responsible: Plant Management

In the last step, the plant provides EPA with a copy of the completed **ENERGY STAR Manufactured Home Plant Certification: Qualification to Produce ENERGY STAR Labeled Homes** certificate issued by the ENERGY STAR Certifier verifying the plant is ready to produce ENERGY STAR labeled homes. (A copy of this certificate is included in Appendix F and is available on the web at: www.mhrahome.org.) The plant also makes information gathered during the qualification process (including the ENERGY STAR-related parts of DAPIA-approved packages and the Site Installation Checklists for the three certification homes, including lists of all non-conforming items and corrective actions taken) available on request to the EPA or its agents upon request.

MANUFACTURED HOME PLANT CERTIFICATION		APPENDIX F
ENERGY STAR MANUFACTURED HOME PLANT CERTIFICATION: Qualification to Produce ENERGY STAR Labeled Homes		
<small>(Name of Certifier) hereby certifies that (Plant and Manufacturer name) has demonstrated the capability to consistently produce Energy Star labeled homes and is therefore authorized to apply the Energy Star label to new homes manufactured under the terms and conditions of the Energy Star program.</small>		
Energy Star Certifier: _____		
Signature: _____		Date: _____
Address: _____		
City/State/Zip: _____		
Telephone: _____		Fax: _____ E-Mail: _____
Plant Requirements to Qualify for Producing Energy Star Labeled Homes:		
METHOD OF COMPLIANCE <small>(Must check one box below)</small>		
<input type="checkbox"/> Home design comply with Energy Star Package: Energy Star Package No.: _____ Climate Region: _____		
<input type="checkbox"/> Computer Analysis (attached)		
ENERGY STAR DESIGN FEATURES INCORPORATED IN PLANT QUALITY ASSURANCE PROCEDURES <small>(Must check all boxes below)</small>		
<input type="checkbox"/> Information included in DAPIA-approved package		
<input type="checkbox"/> Information included in plant Quality Control Manual		
<input type="checkbox"/> Information included in Manufacturer's Installation Manual		
HOMES TESTED IN PLANT <small>(Must check all boxes below)</small>		
<input type="checkbox"/> Three (3) consecutive homes meet Energy Star requirements		
SITE INSTALLATION CHECKLIST VERIFIED <small>(Must check all boxes below)</small>		
<input type="checkbox"/> Site installation checklist identifying items part of Energy Star package verified during installation		
HOMES TESTED IN FIELD <small>(Must check all boxes below)</small>		
<input type="checkbox"/> Three (3) consecutive homes meet Energy Star requirements		
<input type="checkbox"/> Any design changes recorded and used to update specifications in the DAPIA-approved package, installation checklist, Quality Control Manual and Installation Manual		
ENERGY STAR INCORPORATED IN ROUTINE OPERATIONS <small>(Must check all boxes below)</small>		
<input type="checkbox"/> Corrective actions identified during tests implemented		
<input type="checkbox"/> Key plant personnel trained on critical processes and procedures		
<input type="checkbox"/> Unique features in Energy Star DAPIA-approved packages are reviewed with DAPIA and EPA		
<input type="checkbox"/> Set-up crews trained to install and inspect Energy Star labeled homes in the field		
<input type="checkbox"/> Process in place for collecting, tracking and archiving documentation on Energy Star labeled homes		

PRODUCING ENERGY STAR LABELED HOMES

Once a plant has been qualified it can proceed to manufacture ENERGY STAR labeled homes based on the designs approved during the qualification process. This is a simple, two-step activity that builds directly on the knowledge and expertise created during the qualification process.

Step 1. Manufacture and Inspect Homes in the Plant and Attach ENERGY STAR Labels

Who is responsible: **Plant Production Staff**

Manufacture ENERGY STAR labeled homes in accordance with the designs created during the plant qualification process. The homes are inspected by the plant's IPIA in the normal manner. Plant QC personnel use the new information in the Quality Control Manual to check all ENERGY STAR QC issues, particularly duct system details.

After inspections and QC monitoring are complete, ENERGY STAR labels are affixed to the homes. An explanation of how to complete the information on the ENERGY STAR label and placing the label on the home is provided in Appendix D.

Step 2. Install and Inspect Homes in the Field

Who is responsible: **Installers, Plant Site Representative**

A plant representative (such as the factory trim crew or retailer) uses the Site Installation Checklist developed during the plant qualification process to monitor set-up. Non-compliance items are fixed on site. Following installation, the representative reviews the items on the Site Installation Checklist and signs it. A copy of the signed Checklist is kept on file by the plant.

A sample checklist is provided in Appendix E.

Energy Star Climate Region: _____

Manufacturer: _____

Plant Name/Location: _____

Manufacturer's Serial #: _____

Date Manufactured: _____

This home has been independently verified to meet ENERGY STAR guidelines for energy efficiency. ENERGY STAR labeled homes protect the environment by using less energy.

www.energystar.gov

To maintain its status as an active ENERGY STAR Partner, a plant must fulfill the specific reporting and field verification obligations described in this Chapter. These responsibilities are part of an ongoing process that continues as long as the plant is involved in the ENERGY STAR program. By ensuring a high level of quality control, these measures also help manufacturers deliver consistent ENERGY STAR performance that is equal or superior to ENERGY STAR site-built homes. The process also serves to protect the plant's investment in the ENERGY STAR Labeled Home program.

1. Maintain Accessible Records

Who is responsible: **Plant Management / Administrative Staff**

A plant must keep records for every home that receives an ENERGY STAR label. The records include a copy of the information placed on the home's ENERGY STAR label, the original, signed ENERGY STAR Site Installation Checklist, results of periodic field evaluations, reports of non-compliance, and reports of corrective actions taken. These documents must also be archived for easy retrieval so that plant personnel can quickly access information on an individual home, a select group of homes or all the homes in the program.

Appendix G provides an example of the type of information to be included in the record-keeping process.

2. Provide Information to EPA

Who is responsible: **Plant Management / Administrative Staff**

A plant must provide quarterly reports to US EPA indicating the number of ENERGY STAR labeled homes shipped and installed. A sample data collection form for recording this information in a standard format, together with information about where to send the reports, is available on the MHRA web site at: www.mhrahome.org.

3. Conduct Periodic Field Evaluations to Verify Performance

Who is responsible: **Manufactured Housing ENERGY STAR Certifier**

To ensure that its homes are performing as designed, a plant must conduct field evaluations on no less than 2% of its ENERGY STAR labeled homes each year. A Manufactured Housing ENERGY STAR Certifier retained by the plant must certify these evaluations (see Appendix B). The results of the evaluations will be maintained such that plant personnel can quickly access them in response to requests from EPA or its agents.

PARTNERSHIP AGREEMENT

A copy of the ENERGY STAR Partnership Agreement is available on the web at: www.mhrahome.org.



Money Isn't All You're Saving

ENERGY STAR is a broad partnership designed to promote products, buildings, and homes that use less energy without sacrificing quality.

ENERGY STAR FOR HOMES seeks to demonstrate that energy-efficient homes can improve builder profitability, improve home quality and homeowner comfort, lower energy demand, and reduce air pollution.

ENERGY STAR labeled homes use 30 percent less energy than the DOE Voluntary Residential Energy Efficiency Rating Guidelines' Reference House based on 1993 Model Energy Code (MEC) requirements. A home built to these levels would achieve a score of 86 under the Home Energy Rating System.

ENERGY STAR PARTNERSHIP AGREEMENT: ENERGY STAR FOR MANUFACTURED HOMES

Through this agreement _____ (organization name) joins in partnership with ENERGY STAR. Through this partnership, the ENERGY STAR name and/or labels can be used in association with qualified homes.

US Environmental Protection Agency Representative:

Kathleen Hogan; Director, Climate Protection Partnerships Division, U.S Environmental Protection Agency

Signature: _____ Date: _____

Partner's Designated Responsible Key Contact:

Partner Type (check one):

Manuf. Housing Plant Retailer Manuf. Housing Corporate Office Manuf. Housing Community

Contact Name: _____

Signature: _____ Date: _____

Title: _____

Company Name: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Fax: _____

E-Mail: _____ Web Site: _____

Plants and retailers: list all states where you sell your homes:

What organization referred you to ENERGY STAR? _____

Would you like to receive information about improving the energy performance of your office space or building? Yes No

Would you like to receive information about other ENERGY STAR labeled products? Yes No

Average number of ENERGY STAR labeled homes manufactured per year? _____

For Retailers and Communities Only:

List Name, City, and State of Affiliated Manufacturers of ENERGY STAR Labeled Homes:
(Please specify plant names. Include additional manufacturers on a separate sheet.)

Please mail or fax this form to:

ENERGY STAR for Homes
Attn: Brian Ng
Customer Service Coordinator
US EPA (mail code 6202)
1200 Pennsylvania Ave. NW
Washington, DC 20460

Fax: 202-565-2079
Ph: 202-564-9162

For questions or to
request materials, contact
the ENERGY STAR Hotline at
1-888-STAR-YES
(1-888-782-7937)

Or visit our Web site at:
www.energystar.gov/homes



Money Isn't All You're Saving

The ENERGY STAR labeled home performance target can be met through any combination of:

- Envelope upgrades beyond the MEC requirements;
- Controlled air infiltration;
- Upgraded heating and air conditioning systems and
- Upgraded water heating equipment.

To receive an ENERGY STAR label, the home must be manufactured in a certified plant and verified by the plant's verification inspector as per the procedures contained in "ENERGY STAR Labeled Manufactured Homes: Design, Manufacturing, Installation and Certification Procedures."

EPA encourages builder partners to protect the health of occupants by equipping ENERGY STAR labeled homes with features that will improve indoor air quality. Fact sheets available on our Web site discuss this issue in detail.

ENERGY STAR builder partners are encouraged to equip ENERGY STAR labeled homes with energy-efficient lighting and appliances or to offer such equipment as upgrades.

ENERGY STAR PARTNERSHIP AGREEMENT: ENERGY STAR FOR MANUFACTURED HOMES

ENERGY STAR Commitments to Partners

1. Increase awareness of the ENERGY STAR label across the residential and commercial sectors by distributing key messages on the benefits of ENERGY STAR qualified buildings, homes, and products.
2. Provide (through the Internet, Hotline, or other means) current ENERGY STAR news, information, marketing materials, and reference documents including:
 - ENERGY STAR labels and logos
 - ENERGY STAR Labeled Manufactured Homes: Design, Manufacturing, Installation and Certification Procedures
 - ENERGY STAR Logo Use Guidelines,
 - Criteria for ENERGY STAR Qualified Buildings, Homes, and Products, and
 - ENERGY STAR Partnership Agreement and Supplemental Commitments
3. Provide ENERGY STAR partners with public recognition through the Internet, special awards, and media campaigns for their efforts in ENERGY STAR and role in protecting the environment.
4. Respond expediently to any partner requests for information or clarification on ENERGY STAR policy.

General Commitments for ENERGY STAR Partners

1. Use the partnership and the ENERGY STAR label to promote energy efficiency as an easy and desirable option for new home buyers to prevent pollution, protect the environment, and save on energy bills.
2. Build and maintain the meaning of ENERGY STAR as a trustworthy symbol that makes it easy to make a difference for the environment while saving money.
3. Adhere to the ENERGY STAR Logo Use Guidelines and ensure that authorized representatives, such as advertising agencies, distributors, and subcontractors, also comply.
4. Submit all planned marketing campaigns that utilize ENERGY STAR logos/marks for review to ensure accuracy and consistency with ENERGY STAR logo and message use guidelines (Note that this does not apply to basic advertisements showcasing a labeled product). Allow a minimum of five full business days for ENERGY STAR to review and approve campaigns. After five business days, the partner may proceed with their marketing campaign.
5. Fulfill all supplemental commitments for the ENERGY STAR program areas that the partner is joining.

Supplemental Commitments for Manufactured Home Partners

1. Certify plants and manufacture homes according to the guidelines contained in ENERGY STAR Labeled Manufactured Homes: Design, Manufacturing, Installation and Certification Procedures.
2. Manufacture, label, and ship at least one ENERGY STAR labeled home within any ongoing 12-month period.
 - Home manufacturer partners who do not fulfill this requirement will be placed on 'Inactive' status, thereby forfeiting all rights to: the ENERGY STAR name, logo, and other related materials; eligibility for ENERGY STAR awards; and inclusion on lists of active ENERGY STAR partners used on the ENERGY STAR Web site and in advertising materials.
 - Home manufacturer partners placed on 'Inactive' status who build, label, and ship an ENERGY STAR labeled home can be reinstated and regain all benefits of participation.
3. Promote ENERGY STAR to other manufactured home builders, including recruitment as new ENERGY STAR partners.
4. Submit quarterly reports to ENERGY STAR specifying the number of homes verified as meeting ENERGY STAR performance specifications, by retailer. These numbers will be used to determine the number of ENERGY STAR labels to be provided to partners.

General Terms and Disclaimers

1. Partner will not construe, claim, or imply that its participation in ENERGY STAR constitutes federal government approval, acceptance, or endorsement of anything other than Partner's commitment to ENERGY STAR.
2. Partner understands that its participation in ENERGY STAR does not constitute federal government endorsement of the Partner or its homes or services.
3. Partner understands that the activities it undertakes in connection with ENERGY STAR are voluntary and not intended to provide services to the federal government. As such, the partner will not submit a claim for compensation to any federal agency.
4. Partner and ENERGY STAR will assume good faith as a general principle for resolving conflict and will seek to resolve all matters informally, so as to preserve maximum public confidence in ENERGY STAR.
5. This agreement is wholly voluntary and can be terminated by either party at any time or for any reason, with no penalty.
6. Failure to comply with this Partnership Agreement and the Energy Star Logo Use Guidelines can result in termination of this Agreement and authorization to use the logo marks.
7. Energy Star will actively pursue actions for resolving issues of logo use noncompliance.

To ensure the credibility of the ENERGY STAR program, a plant is required to retain an independent, third party energy expert, referred to as the Manufactured Housing ENERGY STAR Certifier, to qualify the plant to produce ENERGY STAR labeled homes and perform periodic review of ENERGY STAR compliance.

This appendix provides information on:

- The capabilities and qualifications needed by the Certifier;
- The Certifier's responsibilities during the qualification process;
- The Certifier's role in helping a plant maintain ENERGY STAR Partner status; and
- How to find a manufactured housing ENERGY STAR Certifier.

CAPABILITIES AND QUALIFICATIONS

The manufactured housing ENERGY STAR Certifier must be able to demonstrate competency in the following areas:

- Manufactured housing design, construction and installation methods;
- Building science and diagnostics (i.e., status as a certified Home Energy Rating System (HERS) rater, licensed engineer or architect, or experienced energy consultant);
- Duct leakage and building shell leakage testing; specifically, duct pressurization and blower door tests.
- Energy efficiency training;
- Document preparation and record keeping.

The certifier must submit an **ENERGY STAR Manufactured Home Plant Certifier: Capabilities and Qualifications Affidavit** to the plant verifying that they possess the skills necessary to perform the certification functions. (A copy of this document is included in Appendix F and is available on the web at: www.mhrahome.org.)

The **Affidavit** also contains a provision prohibiting conflicts of interest. HUD-certified DAPIAs and IPIAs are eligible to serve as Manufactured Housing ENERGY STAR Certifiers.

Based on monitoring reports or other reliable information, EPA may determine that a third party certifier is not adequately carrying out its functions and reserves the right to disqualify third party certifiers.

**ENERGY STAR MANUFACTURED HOME PLANT CERTIFIER:
Capabilities and Qualifications Affidavit**

(Name of Certifier) hereby asserts that s/he meets or exceeds all required capabilities and qualifications to provide ENERGY STAR Certification services as indicated by completing the information on this form. In addition, (Name of Certifier) hereby states that s/he or he does not have financial interests in or are affiliated with a home manufacturer, retailer or installer nor does s/he or he provide services that might affect her or his capacity to evaluate compliance with the Energy Star Labeled Homes Program and render reports of findings objectively and without bias.

Authorized Company Representative: _____
 Signature: _____ Date: _____
 Address: _____
 City/State/Zip: _____
 Telephone: _____ Fax: _____ E-Mail: _____

Capabilities and Qualifications:

MANUFACTURED HOUSING DESIGN, CONSTRUCTION AND INSTALLATION METHODS
(Must check all boxes below)

- Familiarity with Federal Manufactured Home Construction and Safety Standards
- Familiarity with plant production processes
- Familiarity with DAFRA/IPA oversight processes

BUILDING SCIENCE EXPERIENCE
(Must check at least one box below)

- Certified Home Energy Rating System (HERS) Rater or provider
- Licensed Engineer or Architect
- Minimum 5-years of energy consultant experience

MANUFACTURED HOUSING PRACTICES AND DIAGNOSTICS AND PERFORMANCE ASSESSMENT EXPERIENCE
(Must check all boxes below)

- Hands on experience conducting duct and whole house air leakage measurements
- Knowledge of manufactured home design, construction, installation, material use and fabrication techniques

ENERGY EFFICIENCY TRAINING
(Must check all boxes below)

- Experience and training in the principles of building science
- Experience and training in energy efficiency construction practices

DOCUMENT PREPARATION AND RECORD KEEPING
(Must check all boxes below)

- Familiarity with HUD required documentation for manufactured housing
- Capability to maintain computer records



#3

RESPONSIBILITIES DURING THE PLANT QUALIFICATION PROCESS

The bulk of the Certifier's activities will occur during the plant qualification process. In addition to providing general verification of performance, the Certifier will provide specific services in the following areas:

Initial In-Plant Review

- Certify that all proposed ENERGY STAR labeled home designs comply with ENERGY STAR requirements.
- Certify that the methods used to create and document the proposed ENERGY STAR labeled home designs comply with ENERGY STAR requirements.
- Certify the Site Installation Checklist.
- Certify the accuracy and completeness of the DAPIA-approved packages with regard to the ENERGY STAR features of the homes.
- Certify the accuracy and completeness of the Quality Control Manual with regard to the ENERGY STAR program features.
- Certify that the duct pressurization tests in the plant on the three certification homes—measuring total air leakage—comply with the ENERGY STAR requirements. If levels do not meet design specifications, certify that modifications have been made, that the home has been retested, and that they comply.

Field Review

- Observe installation of the three certification homes and certify that the items on the Site Installation Checklist have been successfully completed.
- Certify that the duct pressurization tests on the three certification homes—measuring air leakage to the outside—comply with ENERGY STAR requirements. If levels do not meet design specifications, certify that modifications have been made, that the home has been retested, and that they comply.
- Certify the shell leakage tests on the three certification homes. If levels do not meet design specifications, certify that modifications have been made, that the home has been retested, and that they comply.

Final In-Plant Review

- Certify that any design changes identified through testing and visual inspection in the field are incorporated into the DAPIA-approved packages and the Quality Control Manual and the Site Installation Checklist.
- Certify that the plant's proposed process for collecting, tracking and archiving documentation are consistent with the goals of the ENERGY STAR program described herein.

ROLE IN HELPING PLANT MAINTAIN ENERGY STAR LABELED HOME PARTNER STATUS

After a plant has been qualified and has begun producing ENERGY STAR labeled homes, the Manufactured Housing ENERGY STAR Certifier has an additional role to play: spot checking performance by certifying the testing of randomly selected homes in the field. Such tests will be conducted on no less than 2% of all ENERGY STAR labeled homes produced by a plant in each 12-month period following plant qualification.

An ENERGY STAR Certifier certifies the tests and carries out the following tasks:

- Select a representative sample of homes for testing. The manufacturer shall furnish a list of all homes labeled and not have prior knowledge of the homes selected for random testing. Homes selected for testing should represent as wide a cross-section as possible of the following:
 - ♦ Housing types (single and multisection homes);
 - ♦ Production dates;
 - ♦ Retailers;
 - ♦ Installers, HVAC contractors, and trim-out crews;
 - ♦ Geographical regions;
 - ♦ Climate regions;
 - ♦ ENERGY STAR features.
- Visually inspect each sample home;
- Certify compliance with the Site Installation Checklist;
- Certify duct pressurization tests on the sample homes to measure leakage to the outside. If levels do not meet design specifications, identify the root cause for each non-compliance and determine if each root cause problem is isolated or systemic in nature;
- Certify shell leakage tests on the sample homes. If levels do not meet design specifications, identify the root cause for each non-compliance and determine if each root cause problem is isolated or systemic in nature.
- Document all findings and submit to the manufacturer for inclusion with its ENERGY STAR labeled home documentation.

HOW TO LOCATE A MANUFACTURED HOUSING ENERGY STAR CERTIFIER

The US EPA and the Manufactured Housing Research Alliance maintain a list of experts who are qualified to provide the Manufactured Housing ENERGY STAR Certifier services. Contact the MHRA for further information:

Manufactured Housing Research Alliance
220 West 93rd Street
New York, NY 10025
(212) 666-7771, (212) 666-5389 (fax)
Email: info@research-alliance.org
Web site: www.mhrahome.org

DESIGNING ENERGY STAR LABELED HOMES

The information in this section is used to select the energy features for ENERGY STAR manufactured homes.

To qualify under the ENERGY STAR program, a home is required to be 30 percent more efficient than a comparable home built to the 1995 Model Energy Code (MEC) published by the International Code Council. The 30 percent refers not just to the thermal envelope but to the estimate of total energy use for space heating, space cooling and water heating.

A design for an ENERGY STAR labeled home can achieve this level of performance in one of two ways:

1. By incorporating pre-approved 'packages' of ENERGY STAR features; or
2. By using computer analyses to create designs that meet ENERGY STAR requirements.

To ensure that homes meet or exceed ENERGY STAR requirements, the ENERGY STAR certifier must review either process. The Certifier can approve individual designs, groups of designs or the calculation procedures that lead to the designs, depending on the preferences of a particular plant. The goal is to ensure that every home that leaves the plant with an ENERGY STAR label has been designed to meet or exceed the ENERGY STAR requirements established by the EPA.

Each design that the manufacturer intends to label under the ENERGY STAR program must be approved by the Certifier. A design is defined as a unique floor plan for which the manufacturer develops a DAPIA package. All of the design variations that are included in a single DAPIA package are considered part of a single ENERGY STAR model.

INCORPORATING PRE-APPROVED ENERGY STAR 'PACKAGES'

Normally, estimating total energy use requires performing a computer analysis of each home design. However, to simplify the process, this section contains several pre-approved "packages" of energy features that meet or exceed the ENERGY STAR requirements.

Finding the right package of energy measures is a two-step process as follows:

1. Select the climate region where the home will be installed. (Climate region information is provided on the map in Figure C-1. Detailed climate region information is provided on Table C-1.)
2. From the information on Tables C-2a and C-2b, select the six possible packages of energy options provided for the selected climate region.

The notes below will aid in navigating through and interpreting the information provided on the map and tables in this section.

1. Select the climate region where the ENERGY STAR labeled homes will be sited (Figure C-1 and Table C-1)

There are different requirements for each of the four ENERGY STAR regions. The regions are NOT the same as the thermal zones contained in the HUD Standards for manufactured homes nor do the ENERGY STAR region boundaries always coincide with state boundaries. A state may include more than one ENERGY STAR region.

The map in Figure C-1 provides a general idea of the area covered by each climate region and Table C-1 provides a more precise state-by-state index. In cases where a state has more than one climate region, Table C-1 suggests a 'primary' region and lists counties in the other regions as 'exceptions.'

Select the region(s) that correspond to the home sites. Where the destination of a home is not known prior to manufacture, and the plant's typical shipping radius covers more than one region, it may be advisable to select an ENERGY STAR package from the region with the more stringent requirements (Region 1 is the most stringent, Region 4 the least).

2. Select an ENERGY STAR design package (Tables C-2a and C-2b)

For each climate region, six ENERGY STAR design packages are provided. The variety of packages gives the plant fairly wide latitude in deciding how to design an ENERGY STAR labeled home.

A package contains requirements for several features that must be used together to qualify as an ENERGY STAR labeled home. To use the table, first select the climate region where the home will be sited. Next, read across the row that lists the energy type for the heating system (natural gas or electric heat pump). Select the columns containing either manually operated or programmable thermostat. Choose the column within this group with the appropriate duct leakage rate. At the intersection of this row and column is found the required envelope U_o-value. Finally, read across the same row to locate the glass solar heat gain coefficient (SHGC) and the insulation requirement for the external, crossover duct.

All the packages are roughly equivalent in energy terms. That is, all packages will result in the same total energy use. Therefore, saving energy in one area (for example, by using tighter ducts or installing a programmable thermostat) will result in offsets elsewhere (for example, by allowing a higher U_o-value).

A more detailed description of the features on Table C-2a follows:

- **Duct leakage level.** This refers to the amount of leakage from the air distribution ducts as measured with a "Duct Blaster" or similar diagnostic device. During plant qualification, the manufacturer will determine the target leakage rate and steps required to achieve that rate (e. g., duct sealing strategies). The midrange leakage rate of 5% (highlighted columns in Table C-2a) should be readily achievable with currently available duct design and sealing techniques. The duct leakage values on Table C-2a are measurements of air leakage to the outside when the ducts are depressurized to 25 Pascals. The values correlate to cubic feet per minute of leakage divided by the floor area.
- **Type of thermostat.** Programmable thermostats that can be automatically set back to lower temperatures in the heating season or set up to higher temperatures in the cooling season can generate significant energy savings. Use the columns marked Programmable Thermostat if a programmable thermostat is specified for the home and Manual Thermostat if a non-programmable thermostat is used.
- **Overall U_o-value.** This refers to the ability of the home's envelope to resist heat flow and is calculated in the same manner as the U_o-value referred to in the HUD standards.
- **Window Solar Heat Gain Coefficient (SHGC).** This refers to the ability of the window to block solar heat from entering the home and is an important factor that contributes to energy use reduction in regions with high cooling loads. Product specific SHGC information is available from window suppliers.
- **Exterior duct insulation.** This refers to the rated insulation value of materials used for insulating the exterior, crossover duct.



The features listed on Table C-2b are common to all ENERGY STAR labeled homes and described in more detail below:

- **Heating equipment efficiency (AFUE or HSPF).** This refers to the rating provided by the equipment manufacturer. Gas furnaces are rated in terms of Annual Fuel Utilization Efficiency (AFUE), and heat pumps (in the heating mode) are rated in terms of a Heating Season Performance Factor (HSPF).



- **Cooling equipment efficiency (SEER).** This refers to the rating provided by the equipment manufacturer. Air conditioners and heat pumps (in the cooling mode) are rated in terms of Seasonal Energy Efficiency Ratio (SEER). While not an ENERGY STAR requirement, cooling equipment should be correctly sized. (Guidelines for sizing air conditioners and heat pumps are available from the MHRA web site at: www.research-alliance.org.)
- **Hot water equipment efficiency (EF).** This refers to the efficiency rating of the hot water heater. Different Energy Factor (EF) levels are provided for gas and electric equipment.

All ENERGY STAR labeled homes must also meet a requirement for maximum air leakage through the building envelope as follows:

- **Whole home leakage.** All ENERGY STAR labeled homes shall have whole home leakage rates, as measured by blower door tests, that do not exceed 0.35 air changes per hour. Whole home leakage rates are certified by the ENERGY STAR Certifier during plant qualification and as part of periodic field evaluations described in Chapter 4, Maintaining ENERGY STAR Partner Status.

Figure C-1 Climate Region Map

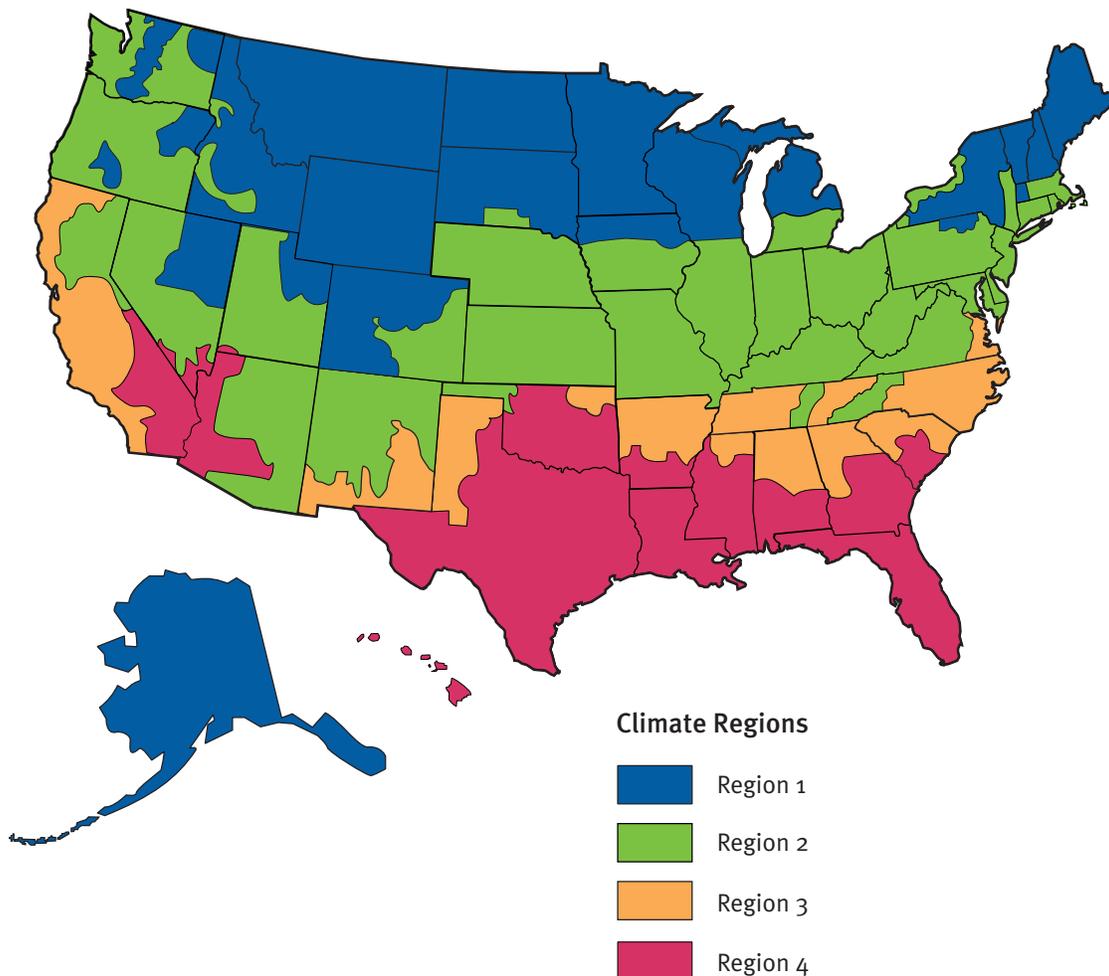


Table C-1 State-by-State Climate Region Index

State	Primary Region	Exception Counties
Alabama	3	Region 4: Baldwin, Coffee, Escambia, Lowndes, Perry, Barbour, Conecuh, Geneva, Macon, Pike, Bullock, Covington, Greene, Marengo, Russell, Butler, Crenshaw, Hale, Mobile, Sumter, Choctaw, Dale, Henry, Monroe, Washington, Clarke, Dallas, Houston, Montgomery, Wilcox
Alaska	1	None
Arizona	4	Region 2: Apache, Coconino, Graham, Navajo, Santa Cruz, Cochise, Gila, Greenlee, Pima, Yavapai
Arkansas	3	Region 4: Ashley, Cleveland, Hempstead, Little River, Pike, Bradley, Columbia, Howard, Miller, Sevier, Calhoun, Dallas, Jefferson, Montgomery, Union, Chicot, Desha, Lafayette, Nevada, Clark, Drew, Lincoln, Ouachita
California	3	Region 2: Alpine, Lake, Nevada, Sierra, Yolo, Butte, Lassen, Placer, Solano, Yuba, Colusa, Modoc, Plumas, Sutter, Glenn, Mono, Shasta, Tehama Region 4: Imperial, Inyo, Riverside, San Bernardino
Colorado	1	Region 2: Baca, Custer, Kit Carson, Phillips, Washington, Bent, El Paso, Lake, Prowers, Yuma, Chaffee, Fremont, Las Animas, Pueblo, Cheyenne, Huerfano, Lincoln, Sedgwick, Crowley, Kiowa, Otero, Teller
Connecticut	2	None
Delaware	2	None
Florida	4	None
Georgia	4	Region 3: Banks, Dawson, Habersham, Marion, Stephens, Barrow, DeKalb, Hall, Meriwether, Talbot, Bartow, Douglas, Haralson, Murray, Taylor, Carroll, Elbert, Harris, Muscogee, Towns, Catoosa, Fannin, Hart, Oconee, Troup, Chattahoochee, Fayette, Heard, Oglethorpe, Union, Chattooga, Floyd, Henry, Paulding, Upson, Cherokee, Forsyth, Jackson, Pickens, Walker, Clarke, Franklin, Lamar, Pike, Walton, Clayton, Fulton, Lincoln, Polk, White, Cobb, Gilmer, Lumpkin, Rabun, Whitfield, Coweta, Gordon, Macon, Schley, Wilkes, Dade, Gwinnett, Madison, Spalding
Hawaii	4	None

Designing Energy Star Labeled Homes

State	Primary Region	Exception Counties
Idaho	1	Region 2: Ada Canyon Gem Gooding Jerome Lemhi Lincoln Minidoka Nez Perce Payette Washington
Illinois	2	None
Indiana	2	None
Iowa	2	Region 1: Allamakee Cherokee Emmet Kossuth Pocahontas Black Hawk Chickasaw Fayette Lyon Sioux Bremer Clay Floyd Mitchell Winnebago Buchanan Clayton Franklin O'Brien Winneshiek Buena Vista Delaware Hancock Osceola Worth Butler Dickinson Howard Palo Alto Wright Cerro Gordo Dubuque Humboldt Plymouth
Kansas	2	None
Kentucky	2	None
Louisiana	4	None
Maine	1	None
Maryland	2	None
Massachusetts	2	Region 1: Berkshire Franklin Hampden Hampshire
Michigan	2	Region 1: Alcona Clare Iosco Mason Ontonagon Alger Crawford Iron Mecosta Osceola Alpena Delta Isabella Menominee Oscoda Antrim Dickinson Kalkaska Midland Otsego Arenac Emmet Keweenaw Missaukee Presque Isle Baraga Gladwin Lake Montcalm Roscommon Bay Gogebic Leelanau Montmorency Saginaw Benzie Grand Taverse Luce Muskegon Sanilac Charlevoix Gratiot Mackinac Newaygo Schoolcraft Cheboygan Houghton Manistee Oceana Tuscola Chippewa Huron Marquette Ogemaw Wexford
Minnesota	1	None
Mississippi	4	Region 3: Alcorn Grenada Marshall Prentiss Tishomingo Benton Itawamba Panola Tate Union Calhoun Lafayette Pontotoc Tippah Yalobusha DeSoto Lee
Missouri	2	Region 3: East Prairie Kennett Malden Poplar Bluff
Montana	1	None
Nebraska	2	None

State	Primary Region	Exception Counties				
Nevada	4	Region 1:	Elko	Eureka	Lander	White Pine
		Region 2:	Carson City Churchill Douglas	Esmeralda Humboldt Lincoln	Lyon Mineral	Nye Pershing Storey Washoe
New Hampshire	1	None				
New Jersey	2	None				
New Mexico	2	Region 3:	Chaves DeBaca	Dona Ana Eddy	Guadalupe Hidalgo	Lea Luna Otero
New York	2	Region 1:	Allegany Broome Cattaraugus Cayuga Chemung Chenango Clinton	Cortland Delaware Essex Franklin Fulton Hamilton Herkimer	Lewis Livingston Madison Montgomery Oneida Onondaga Ontario	Otsego Schoharie Schuyler Seneca St. Lawrence Steuben Sullivan Tioga Tompkins Warren Wyoming Yates
North Carolina	3	Region 2:	Alleghany Ashe Avery Buncombe Burke	Caldwell Cherokee Clay Graham Haywood	Henderson Jackson McDowell Macon Madison	Mitchell Polk Rutherford Surry Swain Transylvania Watauga Wilkes Yadkin Yancey
North Dakota	1	None				
Ohio	2	None				
Oklahoma	4	Region 2:	Beaver	Cimarron	Ellis	Harper Texas
		Region 3:	Craig Delaware Mayes	Nowata Osage	Ottawa Pawnee	Rogers Tulsa Wagoner Washington
Oregon	2	Region 1:	Baker	Klamath	Union	Wallowa
Pennsylvania	2	Region 1:	Bradford	Sullivan	Susquehanna	Tioga Wyoming
Rhode Island	2	None				
South Carolina	3	Region 4:	Allendale Bamberg Barnwell Beaufort	Berkeley Calhoun Charleston Clarendon	Colleton Dorchester Hampton	Jasper Lee Lexington Orangeburg Richland Sumter
South Dakota	1	Region 2:	Gregory	Mellette	Todd	Tripp
Tennessee	3	Region 2:	Bledsoe Coffee Cumberland Fentress	Franklin Grundy Marion	Morgan Overton Pickett	Putnum Scott Sequatchie Van Buren Warren White
Texas	4	Region 3:	Andrews Armstrong Bailey Briscoe Carson Castro Cochran Crosby	Dallam Dawson Deaf Smith Floyd Gaines Glasscock Gray Hale	Hansford Hartley Hemphill Hockley Howard Hutchinson Lamb Lipscomb	Lubbock Lynn Martin Midland Moore Ochiltree Oldham Parmer Potter Randall Roberts Sherman Swisher Terry Yoakum

Designing Energy Star Labeled Homes

State	Primary Region	Exception Counties
Utah	2	Region 1: Cache Daggett Morgan Summit Wasatch Carbon Duchesne Rich Uintah Region 4: Washington
Vermont	1	None
Virginia	2	Region 3: Accomack Isle of Wight King William Northampton Stafford Charles City James City Lancaster Northumberland Surry Essex King and Mathews Prince George Sussex Gloucester Queen Middlesex Richmond Westmoreland Greenville King George New Kent Southampton York
Washington	2	Region 1: Chelan Kittitas Pend Orielle Spokane Yakima Ferry Okanogan Skamania Stevens
West Virginia	2	None
Wisconsin	1	None
Wyoming	1	None

Table C-2a Optional ENERGY STAR Packages*

		Package number						Glass SHGC	Min. ext. duct insulation
		1	2	3	4	5	6		
Climate Region	Maximum duct leakage level	3%	5%	7%	3%	5%	7%		
	Thermostat type	Manually operated			Programmable				
1	Maximum Uo-value (natural gas or oil heat)	0.054	0.052	**	0.056	0.054	**	>=0.48	R-8
	Maximum Uo-value (electric heat pump)	**	**	**	**	**	**	**	**
2	Maximum Uo-value (natural gas heat)	0.061	0.057	0.056	0.065	0.061	0.060	>=0.40	R-6.5
	Maximum Uo-value (electric heat pump)	0.058	0.056	0.054	0.059	0.057	0.055	>=0.40	R-6.5
3	Maximum Uo-value (natural gas heat)	0.075	0.073	0.067	0.082	0.080	0.074	<=0.48	R-6.5
	Maximum Uo-value (electric heat pump)	0.072	0.071	0.067	0.073	0.072	0.068	>=0.40	R-6.5
4	Maximum Uo-value (natural gas heat)	0.111	0.102	0.092	0.125	0.116	0.106	<=0.48	R-6.5
	Maximum Uo-value (electric heat pump)	0.097	0.093	0.086	0.104	0.100	0.093	<=0.48	R-6.5

* Check MHRA's web site at: www.mhrahome.org for other ENERGY STAR packages.

**This combination of features requires a location specific analysis using the computer analysis alternative described below.

Table C-2b Standard ENERGY STAR Features (All climate regions)

Heating Equipment	
Natural gas (AFUE)	0.80
Fuel oil (AFUE)	0.78
Electric heat pump (HSPF)	7.2
Cooling Equipment	
Air conditioner or electric heat pump (SEER)	12.0
Hot Water Heater	
Natural gas (EF)	0.56
Electric (EF)	0.88

USING COMPUTER ANALYSIS TO CREATE OTHER ENERGY STAR DESIGNS

As an alternative to the packages of energy features contained in this Appendix, manufacturers have the option of developing designs using computer software from the list of software available on the web at: www.mhrahome.org.

The major advantage of the computer analysis option is the ability to tailor the design to a specific location and design considerations. For example, lower equipment efficiencies than those provided on Table C-2 can be combined with a lower home Uo-value using this approach. The principal disadvantage of this alternative is the cost and time associated with conducting the analysis.

COMPLETING THE ENERGY STAR LABEL

The instructions below explain how to complete the ENERGY STAR label.

The sticker should be placed adjacent to the HUD Data Plate or inside the electric panel cover. As an option, this information can be included on the home's HUD Data Plate, along with the ENERGY STAR logo and verification statement shown at the bottom of the label.

A copy of the ENERGY STAR label is available on the web at: www.mhrahome.org.

EPA will provide each plant partner with software for printing labels and blank label sticker stock. Additional blank label stock is available at no charge by calling EPA's Hotline at 1-888-782-7937 or visiting the MHRA web site at: www.mhrahome.org.

Enter the climate region where the ENERGY STAR labeled home will be sited.

Enter the name of the manufacturer.

Enter the name and location of the plant.

Enter the Manufacturer's serial number.

Enter the date of home manufacture.



An ENERGY STAR[®] Labeled Home

ENERGY STAR Climate Region:

Manufacturer:

Plant Name/Location:

Manufacturer's Serial #:

Date Manufactured:

This home has been independently verified to meet ENERGY STAR guidelines for energy efficiency. ENERGY STAR labeled homes protect the environment by using less energy.

www.energystar.gov

SAMPLE ENERGY STAR MANUFACTURED HOME SITE INSTALLATION CHECKLIST

Home manufacturer: _____ Plant location: _____

Home Serial Number: _____ Model number: _____

Home address: _____ City: _____ State: _____ County: _____

This home was manufactured in conformance to the US Environmental Protection Agency's ENERGY STAR Labeled Home Program. The items below are required to ensure that the home is installed in compliance with the manufacturer's ENERGY STAR labeled home design.

The items on this checklist are to be completed by a representative of the home manufacturer. After completing the checklist, the manufacturer's representative shall sign the checklist and return the original copy to the manufacturer.

Home location

Is the home located in the climate region indicated on the home's ENERGY STAR label? (A lower region number is acceptable.)

- Yes No

Marriage line seal

The marriage line areas must be filled with a non-porous insulating gasket creating a permanent air barrier. Identify that the following items are completed:

- Ceiling
- End walls
- Floor

Acceptable gaskets can be one or two-part systems: "center-seal," "soft chink," foams, insulation wrapped in poly, insulation covered by butyl or other long-life tape on one side, insulation covered with floor-leveling compound on the inside.

Tears in bottom board material repaired

All tears in the bottom board material are covered and sealed with a durable patch to prevent air leakage. (Foam sealant can be used on lag bolt and other small holes.) Identify that the following items are completed:

- Bottom board is intact

Crossover duct installation

For multisection homes, the crossover ducts must be sealed with a permanent connection per the Manufacturer's Installation Manual. Identify that the following items are completed:

- All crossover ducts have been installed and wrapped with insulation
- Crossover collar remains secured (does not easily rotate or move)
- All crossover duct insulation is R-___ or higher
- Nylon or metal straps are used and are snug
- Three or more screws are placed below the straps through the flexible duct and into the crossover collar
- Crossover duct insulation is pushed into the belly and sealed with tape or foam sealant at each end

Field Installed HVAC equipment

- Cooling equipment meets or exceeds the following performance rating: SEER 12
- Heating equipment efficiency meets or exceeds specifications: HSPF 7.2

Description of deficient installation and steps taken to correct the deficiency: _____

(Continue on back)

I have inspected this home and find that all site work complies with the above requirements.

Signature (Manufacturer's representative)

Date

Print Name (Manufacturer's representative)

A copy of the Sample ENERGY STAR Manufactured Home Site Installation Checklist is available on the web at: www.mhrahome.org.

(Continued from front)

Description of deficient installation and steps taken to correct the deficiency: _____

MANUFACTURED HOME PLANT CERTIFICATION

ENERGY STAR MANUFACTURED HOME PLANT CERTIFICATION: Qualification to Produce ENERGY STAR Labeled Homes

(Name of Certifier) _____ hereby certifies that (Plant and Manufacturer name) _____ has demonstrated the capability to consistently produce ENERGY STAR labeled homes and is therefore authorized to apply the ENERGY STAR label to new homes manufactured under the terms and conditions of the ENERGY STAR program.

ENERGY STAR Certifier: _____

Signature: _____ Date: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Fax: _____ E-Mail: _____

Plant Requirements to Qualify for Producing ENERGY STAR Labeled Homes:

METHOD OF COMPLIANCE

(Must check one box below)

- Home designs comply with ENERGY STAR Package:
ENERGY STAR Package No.: _____ Climate Region: _____
- Computer Analysis (attached)

ENERGY STAR DESIGN FEATURES INCORPORATED IN PLANT QUALITY ASSURANCE PROCEDURES

(Must check all boxes below)

- Information included in DAPIA-approved package
- Information included in plant Quality Control Manual
- Information included in Manufacturer's Installation Manual

HOMES TESTED IN PLANT

(Must check all boxes below)

- Three (3) consecutive homes meet ENERGY STAR requirements

SITE INSTALLATION CHECKLIST VERIFIED

(Must check all boxes below)

- Site installation checklist identifying items part of ENERGY STAR package verified during installation

HOMES TESTED IN FIELD

(Must check all boxes below)

- Three (3) consecutive homes meet ENERGY STAR requirements
- Any design changes recorded and used to update specifications in the DAPIA-approved package, installation checklists, Quality Control Manual and Installation Manual

ENERGY STAR INCORPORATED IN ROUTINE OPERATIONS

(Must check all boxes below)

- Corrective actions identified during tests implemented
- Key plant personnel trained on critical processes and procedures
- Unique features in ENERGY STAR DAPIA-approved packages are reviewed with DAPIA and IPIA
- Set-up crews trained to install and inspect ENERGY STAR labeled homes in the field
- Process in place for collecting, tracking and archiving documentation on ENERGY STAR labeled homes



ENERGY STAR MANUFACTURED HOME PLANT CERTIFIER: Capabilities and Qualifications Affidavit

(Name of Certifier) _____ hereby asserts that s/he meets or exceeds all required capabilities and qualifications to provide ENERGY STAR Certification services as indicated by completing the information on this form. In addition, (Name of Certifier) _____ hereby states that she or he does not have financial interests in or are affiliated with a home manufacturer, retailer or installer, nor does she or he provide services that might affect her or his capacity to evaluate compliance with the Energy Star Labeled Homes Program and render reports of findings objectively and without bias.

Authorized Company Representative: _____

Signature: _____ Date: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Fax: _____ E-Mail: _____

Capabilities and Qualifications:

MANUFACTURED HOUSING DESIGN, CONSTRUCTION AND INSTALLATION METHODS

(Must check all boxes below)

- Familiarity with Federal Manufactured Home Construction and Safety Standards
- Familiarity with plant production processes
- Familiarity with DAPIA/IPIA oversight processes

BUILDING SCIENCE EXPERIENCE

(Must check at least one box below)

- Certified Home Energy Rating System (HERS) Rater or provider
- Licensed Engineer or Architect
- Minimum 5-years of energy consultant experience

MANUFACTURED HOUSING PRACTICES AND DIAGNOSTICS AND PERFORMANCE ASSESSMENT EXPERIENCE

(Must check all boxes below)

- Hands on experience conducting duct and whole house air leakage measurements
- Knowledge of manufactured home design, construction, installation, material use and fabrication techniques

ENERGY EFFICIENCY TRAINING

(Must check all boxes below)

- Experience and training in the principles of building science
- Experience and training in energy efficiency construction practices

DOCUMENT PREPARATION AND RECORD KEEPING

(Must check all boxes below)

- Familiarity with HUD required documentation for manufactured housing
- Capability to maintain computer records



DOCUMENTATION NEEDED FOR RECORD KEEPING

This Appendix describes the information on ENERGY STAR labeled homes that must be maintained by the manufacturer.

A plant must keep records on all homes that receive an ENERGY STAR label. The records must be archived for easy retrieval, so that plant personnel can quickly access information on an individual home, a select group of homes or all the homes in the program. The records must be retained by the manufacturer for the same length of time specified in the HUD Regulations and Standards for Manufactured Housing for general home documentation.

GENERAL IDENTIFYING INFORMATION

The following documentation must be maintained for every ENERGY STAR labeled home:

- Manufacturer's serial number;
- Date of manufacture;
- Insulation package;
- Window specifications;
- HVAC equipment specifications;
- Duct sealing specifications;
- Signed Site Installation Checklist.

QUARTERLY REPORTING AND INFORMATION REQUESTS

The quarterly reports provided by the plant to US EPA shall contain the following information:

- Manufacturer's name, plant name, plus contact person's name and phone number at plant;
- Number of ENERGY STAR homes produced in the period;
- Retailers' city and state;
- Sponsoring program / utility (if applicable).

The Quarterly Reporting form is available on the web at: www.mhrahome.org.

To ensure that the Quality Assurance Program is operating as intended, US EPA or its agent reserves the right to:

1. request all records and documentation pertaining to ENERGY STAR labeled homes be made available and
2. periodically observe the testing and quality control procedures.